

CLAIMS

1. A method for modulating an information signal in a telecommunication system, in which spreading codes are used for discriminating between user signals, said codes being allocated for incoming call requests by selecting them from one or more code structures having codes of different bit rates,

characterized by the steps of

a) noting (2) the rate of a code to be allocated for an incoming call request,

b) determining (8) the availability of codes having the desired bit rate,

c) allocating (9,10) a code in accordance with pre-selected rules by considering the availability of the different codes in a way leading to an optimal use of the code structure(s).

2. The method of claim 1, characterized by assigning (4) the incoming request to another code structure if it is considered in step a) that the transfer capacity would be exceeded.

3. The method of claim 1, characterized by blocking (4) an incoming call request if it is considered in step a) that the transfer capacity would be exceeded by said incoming call request.

4. The method of claim 1, characterized by allocating a code of a requested bit rate among free codes of requested level if it is considered in step b) that there is at least one available code of the requested bit rate.

5. The method of claim 4, characterized by allocating (9,10) in step c), if there is more than one code of the requested bit rate available, the code in accordance with pre-selected rules in such a way that the selection of a code to be allocated is performed

so as to prioritize codes preserving a highest possible number of available higher bit rate codes.

6. The method of claim 5, characterized by the selection of a code to be allocated among the prioritized codes is performed (11) by maximizing the probability of future release of a higher bit rate code.

7. The method of claim 5 ~~or 6~~, characterized by prioritizing codes by

- a) determining an unavailability degree of shorter length codes relating to available free codes of requested bit rate,
- b) choosing the set of codes among the free codes having related shorter length codes with the highest unavailability degrees, and
- c) repeating the foregoing step for related shorter length codes until the root code, and finally choosing a code from the resulting subset.

8. The method of claim 1, characterized by performing reallocation (8) if it is considered in step b) that no codes of the requested bit rate exist.

9. The method of claim 8, characterized by performing reallocating by assigning (6) the incoming request to an unavailable code and reallocating (7) used related lower bit rate codes to release the assigned unavailable code.

10. The method of claim 9, characterized by choosing as a preferred unavailable code one minimizing the total number of changes of already allocated codes.

11. The method of claim 9, characterized by choosing as a preferred unavailable code one having the lowest number of assigned lower bit rate codes.

12. The method of claim 9, characterized by performing reallocation of used codes either by allocating or reallocating in accordance with the same rules as used for allocating codes to an incoming request.

13. The method of claim 9, characterized by choosing as preferred unavailable code one having lowest unavailability.

14. The method of claim 9, characterized by choosing as preferred unavailable code for reallocation one having the lowest number of assigned lower bit rate codes in its subtree, and, in case there are more than one such unavailable code, choosing one having a lowest unavailability level.

15. A system for modulating an information signal in a telecommunication system, in which spreading codes are used for discriminating between user signals, said codes being allocated for incoming call requests by selecting them from one or more code structures having codes of different bit rates,

characterized by means (13, 19-21) for

a) noting a desired bit rate of a code to be allocated for an incoming call request,

b) determining the availability of codes having the desired bit rate,

c) allocating a code in accordance with pre-selected rules by considering the availability of the different codes in a way leading to an optimal use of the code structure(s).

16. The system of claim 15, characterized by means (15) for assigning the incoming request to another code structure if it is considered that the transfer capacity would be exceeded.

17. The system of claim 15, characterized by means (15) for blocking an incoming call request if it is considered that the transfer capacity would be exceeded by said incoming call request.

18. The system of claim 15, characterized by means (19) for allocating a code of a requested bit rate among free codes of requested level if it is considered that there is at least one available code of the requested bit rate.

19. The system of claim 18, characterized by means (20,21) for allocating, if there is more than one code of the requested bit rate available, the code in accordance with pre-selected rules in such a way that the selection of a code to be allocated is performed so as to prioritize codes preserving a highest possible number of available higher bit rate codes.

20. The system of claim 19, characterized by means (22) for performing said selection of a code to be allocated by maximizing the probability of future release of a higher bit rate code.

21. The system of claim 19 or 20, characterized by means (19-22) for prioritizing codes by

- a) determining an unavailability degree of shorter length codes relating to available free codes of requested bit rate,
- b) choosing the set of codes among the free codes having related shorter length codes with the highest unavailability degrees, and
- c) repeating the foregoing step for related shorter length codes until the root code, and finally choosing a code from the resulting subset.

22. The system of claim 15, characterized by means (18) for performing reallocation if it is considered that no codes of the requested bit rate exist.

23. The system of claim 22, characterized by means (17,18) for performing reallocating by assigning the incoming request to an unavailable code, and reallocating used related lower bit rate codes to release the assigned unavailable code.

24. The system of claim 23, characterized by means for choosing as a preferred unavailable code one minimizing the total number of changes of already allocated codes.

25. The system of claim 23, characterized by means for choosing as a preferred unavailable code one having the lowest number of assigned lower bit rate codes.

26. The system of claim 23, characterized by means for performing reallocation of used codes either by allocating or reallocating in accordance with the same rules as used for allocating codes to an incoming request.

27. The system of claim 23, characterized by means for choosing as preferred unavailable code one having lowest unavailability.

28. The system of claim 23, characterized by means for choosing as preferred unavailable code for reallocation one having the lowest number of assigned lower bit rate codes in its subtree, and, in case there are more than one such unavailable code, choosing one having a lowest unavailability level.

29. Apparatus to be used in a digital communication system, in which communication system a spreading code is used in the modulation to discriminate between user signals, the code being allocated from a set of codes of different bit rates in such a way that the highest possible number of higher bit rate codes are preserved, characterized by means for performing the steps described

in any of claims 1 - 14.

30. Computer program to be used in a telecommunication system, in which communication system a spreading code is used in the modulation to discriminate between user signals, the code being allocated from a set of codes of different levels in such a way that the highest possible number of higher bit rate codes are preserved,

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characterized in that the following steps are carried out

- a) noting the bit rate of a code to be allocated to an incoming call request,
- b) determination of the availability degree of the different codes having the desired bit rate,
- c) allocating a code according to the availability degree in accordance with an algorithm or a reallocation algorithm performing pre-selected rules.

31. Computer program of claim 30, further characterized by means for performing the steps of any of claims 2 - 14.

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